DOI: 1234567890
Published: 19 November 2018

POSTER ABSTRACT

Several case studies using CDD in paper and textile conservation at the Lithuanian Art Museum's Pranas Gudynas Restoration Centre

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1 Introduction

The Pranas Gudynas Restoration Centre (PGRC) is a branch of the Lithuanian Art Museum. It was founded in 1978 (although restorers and researchers had worked in the museum from an earlier date). There are nine departments in the PGRC and more than 60 professional conservators and scientists work in those departments. The PGRC is primarily responsible for the long-term preservation of the Lithuanian Art Museum's collections and also assists in the preservation, conservation and technological study of collections from other Lithuanian museums, churches or institutions. The Centre is the main training base for restorers of portable cultural heritage in Lithuania.

We started to use CDD around 2003, when our chemists offered this material for applying in specific conservation situations. CDD is currently used here in paper and textile conservation for fixing water-sensitive materials and as protection against aqueous solutions.

2 Paper

2.1 Case study 1: *Dance*

Dance, late 19th/early 20th century, China. Paper, cardboard, hand coloured xylography, watercolour. 62 × 105.6 cm. Conserved by Eglė Piščikaitė.

This wood engraving has been printed on a thin paper, attached at the edges to a distorted cardboard backing. The composition of the glue – carbohydrates and proteins – was identified by infrared spectroscopy. The print has been tinted with bright colours, and the colorants used are water-sensitive, especially the red. The paper was dusty and dirty, spotted and discoloured. There were many instances of damage, including missing small fragments. The acidity of paper before treatment was measured at pH 5.67.

Surface dust and dirt were cleaned. The paper was separated mechanically from the cardboard and remains of the glue were removed. The paints were fixed with a saturated solution of CDD in hexane, allowing the paper to be washed with 1 : 1 water and ethanol without disturbing the paints. The paper was alkalised using a solution of calcium hydrogen carbonate. After treatment, the pH of the paper was 6.8. Any tears were repaired and losses were filled using 6 g/m^2 *kozo* tissue paper and Klucel G (hydroxypropyl cellulose ether) in ethyl alcohol. The paper sheet was then flattened and the fills were retouched with watercolours.

2.2 Case study 2: Plan of Astravas Manor

Plan of Astravas manor possession, second half of the 19th century, Lithuania. Paper, watercolour, ink. 36 × 39 cm. Biržai Region Museum Sėla. Conserved by Eglė Virpilaitienė.

This plan was creased from folding, and the paper had turned yellow. The acidity of paper was tested before treatment, and was found to be pH 6.13.

The solubility of the inks was checked before cleaning, and the green colour was found to be water-sensitive. The inks were fixed with a saturated solution of CDD in hexane before washing. The paper was washed on a piece of blotting paper moistened with distilled water. During washing, the obverse of the plan was sprayed with 1 : 1 water and ethanol. The paper was alkalised using a solution of calcium hydrogen carbonate. After the treatment, the pH of the paper was 6.9. Any tears were then mended and losses were filled with Japanese tissue paper and wheat starch paste. The artefact was lined with 9 g/m^2 Japanese paper using wheat starch paste. Finally, the paper sheet

Figure 1 The chest before conservation. Photo: Vilma Šileikienė.

Figure 2 A fragment of the chest upholstery during conservation with CDD applied to it. Photo: Danguolė Daugirdienė.

was flattened under pressure.

3 Textiles

3.1 Case study 3: Chest

Chest, late 19th–early 20th century, unknown origin. Wood, cardboard, brass, silk, metal threads, cotton. 30 × 45 × 34.5 cm. Šiauliai Aušra Museum. Conserved by Danguolė Daugirdienė.

This chest (Figure 1) is upholstered with yellowish silk moiré, decorated with silk thread embroidery, relief embroidery of metal threads, and with added metal bands. Two rows of braids are glued on the edges of the chest. Before treatment, the silk moiré was very dirty, dusty, stained, worn and tattered, with tidelines from water damage. The silk wefts had crumbled away in many places, and the cotton warps had loosened. The braids were ragged, deformed and were coming away from the substrate.

The braids had been attached with strong protein glue (traces of flour, casein and hard animal glue were identified). Some old glue stains needed to be removed, so the metal embroidery threads needed to be protected from moisture. A saturated solution of CDD in hexane was brushed onto both sides of the silk (Figure 2).

Areas of hardened glue were covered with an enzyme mixture compress (amylase and protease for the flour and animal glue and a milk protein-hydrolysing protease for the casein) and placed on an IMAT carbon nanotube heater for about 12 hours.[1] This procedure was repeated until the glue was fully loosened. After glue removal, the CDD coating sublimed in several days. After sublimation, the silk was washed using a neutral detergent and dried on the carbon nanotube heater (Figure 3).

Figure 3 The chest after conservation. Photo: Vilma Šileikienė.

3.2 Case study 4: *Landscape with Roses*

Landscape with Roses. Oil painting on silk, unknown origin. 55 × 43 cm. Private collection. Conserved by Vitalija Puodžiukienė.

This landscape has been painted in oils on silk satin. The upper part of picture was torn off, and there were marks from earlier framings and traces of rust. There were also stains from hardened and darkened glue. The silk was dirty, stained, marked

1 See http://www.imatproject.eu/en for more information about this heater.

with tidelines and covered with excretions of insects. The painting layer was thin and fragile.

The paint layer was strengthened with a 0.25% skin glue solution using a soft brush. Insect excretions were removed mechanically and stains were cleaned with ethanol. The silk was cleaned (except in the painted areas) with hexane. After solvent cleaning, the silk became brighter, but there were residual darkened tidelines. The paint layer was protected with a solution of CDD in hexane so the silk could be washed.

The silk was washed on a vacuum table with a solution of pH neutral detergent in water. The solution was applied by patting with cotton swabs. After washing, the pH of the silk had increased. Holes and tattered edges were lined by hot ironing with a silk textile that had been sprayed with a copolymer of polyvinyl acetate and butyl acrylate in acetone.

Biographies

Rūta Kasiulytė has worked as a paintings conservator in the Pranas Gudynas Restoration Centre, Lithuanian Art Museum since 2001. She studied at the Vilnius Art Academy, where she gained MA degrees in Painting (1996) and Easel Painting Restoration (2000). In 2004, she completed special professional studies in the Conservation of Cultural Heritage in the Faculty of Chemistry, Vilnius University. Rūta Kasiulytė has published articles about technical and theoretical questions of restoration of modern painting, as well as presenting papers and posters at European conservation conferences.

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Sandra Garšvienė has an MA in Archaeology from the Faculty of History, Vilnius University (1999) and a Diploma in the Conservation of Cultural Heritage from the Faculty of Chemistry, Vilnius University (2004). Since 1996 she has worked at the Pranas Gudynas Restoration Centre, Lithuanian Art Museum as a conservator of archaeological objects. She specialises in the conservation of objects made from metal and leather, and has written articles on this subject.